

Appl. No.: 10/691,044

Amdt. dated June 1, 2006

Reply to Office Action of March 3, 2006

Amendments to the Claims:

1. (currently amended) A method of producing a high-strength, low-shrinkage synthetic flat yarn, comprising the steps of

melt spinning a plurality of advancing filaments from a molten polymer;

cooling and combining the filaments to form an advancing multifilament yarn;

drawing the advancing yarn;

compressing the advancing and drawn yarn to form an advancing plug at an increased temperature;

disentangling the plug under a tension so as to withdraw ~~withdrawn~~ the yarn from the plug in a heated condition and with the tension being sufficient to remove any significant crimp and form an advancing flat yarn; and

winding the flat yarn into a package.

2. (original) The method of claim 1, wherein the molten polymer for melt spinning the filaments is extruded from a polyester.

3. (original) The method of claim 1, wherein the compressing step occurs with the aid of a medium, which advances the yarn for forming the plug.

4. (original) The method of claim 3, wherein the medium consists of hot air or hot vapor.

5. (original) The method of claim 1, wherein the flat yarn is additionally drawn after disentangling the plug and before it is wound into a package.

6. (original) The method of claim 3, wherein while disentangling the plug, the position of the plug end is sensed, and that as a function of the position of the plug end, the temperature of the medium is controlled.

7. (original) The method of claim 1, wherein while disentangling the plug, the position of the plug end is sensed, and that as a function of the position of the plug end, the withdrawal speed of the flat yarn from the plug is controlled.

8. (original) The method of claim 1, wherein before being compressed, the yarn is guided by a godet, and that the ratio of the takeup speed for winding the flat yarn to the circumferential speed of the godet is greater than about 0.85 to 1.

9. (currently amended) A method of producing a high-strength, low-shrinkage synthetic flat yarn, comprising the steps of

melt spinning at least one advancing filament from a molten polymer;

cooling the one filament to form an advancing yarn;

drawing the advancing yarn;

compressing the advancing and drawn yarn to form an advancing plug at an increased temperature;

disentangling the plug under a tension so as to withdraw ~~withdrawn~~ the yarn from the plug in a heated condition and with the tension being sufficient to remove any significant crimp and form an advancing flat yarn; and

winding the flat yarn into a package.

10. (cancelled)

11. (currently amended) The apparatus of claim 15 [[10]], further comprising a final draw zone downstream of the relaxation device for withdrawing and drawing the flat yarn.

12. (original) The apparatus of claim 11, wherein the final draw zone comprises at least one pair of godets, or at least one godet with a guide roll, which cooperates with the takeup device.

13. (original) The apparatus of claim 10, wherein the relaxation device comprises a feed nozzle upstream of the stuffer box chamber, which advances the yarn into the stuffer box chamber by means of a tempered fluid medium.

14. (original) The apparatus of claim 13, wherein the stuffer box chamber comprises a gas permeable guide section, through which the medium leaves the stuffer box chamber.

15. (new) An apparatus for producing a high-strength, low-shrinkage flat yarn comprising,

a melt spinning device for melt spinning at least one advancing filament from a molten polymer,

a cooling zone positioned to cool the advancing filament and form an advancing yarn,

a draw zone positioned to draw the advancing yarn,

a relaxation device comprising a stuffer box chamber positioned to receive the drawn advancing yarn and form a compressed yarn plug while heating the yarn, and

a yarn takeup device for withdrawing the heated yarn from

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the stuffer box chamber under sufficient tension to remove any significant crimp and produce a high-strength, low-shrinkage flat yarn.

16. (new) The apparatus of claim 15, wherein the melt spinning device is configured for spinning a plurality of filaments, and further comprising guide means at the downstream end of the cooling zone for combining the filaments to form a multifilament yarn.